



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/803,895

03/19/2004

Akira Oosawa

Q80309

8054

23373 7590 10/04/2007
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

WANG, CLAIRE X

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

10/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/803,895	Applicant(s) OOSAWA, AKIRA	
	Examiner Claire Wang	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicants' response to the last Office Action, filed on July 23rd, 2007 has been entered and made of record.
2. The rejection of claim 8 is rendered moot by applicant's cancellation of claim 8.
3. The rejection of claim 3 is maintained because applicant's amendment does not overcome the 112, second paragraph rejection.

Response to Arguments

4. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claim 3 is rejected under 112 second paragraph because it is unclear what "symptom" stands for. It is noted that the word "symptom" relates to an indication of disorder or disease when experienced by an individual as change from the normal. Examiner suggests changing the word "symptom" to "sign". For the purposes of further prosecution on said claim, examiner will read the word "symptom" claim 3 as "sign".

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeo et al. (US 5,732,121 hereinafter "Takeo") in view of Paragios et al. (US 7,079,674 hereinafter "Paragios")

As to claim 1, Takeo teaches an image judging apparatus (detection of abnormal patterns; Col. 5, lines 61-64) comprising a candidate region extracting means for extracting candidate regions for predetermined patterns from medical image data (#1 Fig. 1 teaches an iris filter processing step which detects the region representing the tumor pattern within a radiation image is detected; Col. 15, lines 1-9); an inner/outer outline image extracting means for extracting inner/outer outline images, which are in the vicinity of the outline of the candidate regions extracted by the candidate region extracting means (Fig. 6); and a pattern judging means for judging the type of pattern within the candidate regions, by employing characteristic amounts of the inner/outer outline image extracted by the inner/outer outline image extracting means (#8 Fig. 1 teaches a judging step that decides whether or not the region extracted is an abnormality or a false positive).

However, Takeo does not teach wherein the inner/outer outline region includes the entire outline of the candidate regions. Paragios teaches using integrated propagation model to iteratively determining the actual contour boundaries of the inner and outer walls of the subject of interest in the image (Col. 21, lines 60-67). Thus this reads on the claimed inner/outer outline region includes the entire outline of the candidate regions. Therefore, it would have been obvious for one ordinarily skilled in the art at the time the invention was made to combine Takeo's method for detecting abnormal patterns having inner/outer outline regions with the inner and outer contour boundary determination system of Paragios because it will allow a more accurate determination of the candidate regions.

As to claim 7 it is the method claim of claim 1. Therefore claim 7 is analyzed in the same way as claim 1. Please see above for detail analysis.

As to claim 8, it is the computer-readable medium claim of claim 1. Therefore claim 8 is analyzed in the same way as claim 1. Please see above for detail analysis.

As to claim 9, it is the same as claim 8. Please see above for detail analysis.

As to claim 2, Takeo teaches wherein the type of pattern is one of a normal pattern, an abnormal pattern, a benign abnormal pattern, and a malignant abnormal pattern (#8 Fig. 1 teaches a judging step that decides whether or not the region extracted is an abnormality or a false positive).

As to claim 3, Takeo teaches wherein the type of pattern is a type of sign, which is similar to the pattern (once flags 1-6 have been set to be "1" it is judged that the pattern is the tumor pattern otherwise it is judged to be a false positive; Col. 18, lines 1-6).

As to claim 4, a density pattern extracting means, for extracting density patterns, which are present within unit pixel groups (picture element of interest; Col. 19, line 26) that constitute the inner/outer outline images, extracted by the inner/outer outline image extracting means (detecting a definite prospective abnormal pattern in accordance with the probability density function information; Col. 6, lines 29-33); a presence frequency calculating means, for judging which of the density patterns the unit pixel groups of the inner/outer outline images are similar to, and calculating presence frequencies by counting the presence of the similar density patterns within the inner/outer outline image (the picture element of interest is counted; Col. 19, lines 24-29); and a classifying means, for classifying the inner/outer outline images according to the type of pattern, based on the presence frequencies of the density patterns (#8 Fig. 8); wherein the pattern judging means judges to which classification the candidate region belongs, from

among the classifications of the inner/outer outline images, which were classified according to the type of pattern by the classifying means, by employing the presence frequencies of the density patterns therein, derived by the presence frequency calculating means, as characteristic amounts (#8 Fig. 8).

As to claim 6, it is the same as claim 4. Please see above for detail analysis.

As to claim 5, Takeo teaches wherein the inner/outer outline image extracting means divides the inner/outer outline image into two or more regions (Fig. 1, #4-1 and #4-2 shows separating the obtained regions into a 1st region and a 2nd region) comprising an outline edge, an outline interior and an outline exterior (1st region is defined to have a $r < 4/3R$ and the 2nd region is defined to be $R < r < 4/3R$; Fig. 1); and the pattern judging means judges the type of pattern based on the characteristic amount of at least one of the regions (the judging step of Fig. 1 is dependent from the calculated results of regions 1 and 2).

As to claim 10, Takeo teaches wherein the inner/outer outline region includes inward vicinity and outward vicinity of the outline of the candidate regions (Fig. 6).

As to claim 11, Takeo teaches wherein the inner/outer outline region is within a range from edge of the outline of the candidate regions (Fig. 6).

As to claim 16, the apparatus as defined in claim 1, wherein the inner/outer outline images are divided into outline edge regions, outline interior regions, and outline exterior regions (Fig. 6).

As to claims 12-13 and 17, they are the apparatus claims of claims 10-11 and 16.

Please see above for detail analysis.

As to claims 14-15 and 18, they are the computer readable medium claims of claims 10-11 and 16. Please see above for detail analysis.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claire Wang whose telephone number is 571-270-1051. The examiner can normally be reached on Mid-day flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Claire Wang
09/30/2007



SAMIR AHMED
PRIMAR EXAMINER